Gulf of Mexico Alliance White Paper
Environmental Education in the Gulf States

Problem Statement

Environmental education is a unique concept that has roots in science but application in socioeconomics. As the coastal environment is being seriously and negatively impacted by stressors associated with the dramatic increases in population growth in this Gulf Coast region, effective environmental education is more important then ever.

Effective environmental education along the Gulf Coast is hindered by two key factors:

- Disparity between the Coastal States' capabilities and subsequent funding. The five Gulf States have ecologically significant coastlines, but with dramatic differences in the size of their coastlines. These differences lead to increased education opportunities in some states but reduced opportunities in others.
- Over the past couple of decades, *environmental awareness* has been on the rise; however, *science literacy* has been in gradual decline in the academic, public and professional arenas.

Inadequate environmental education in the Gulf Coast region can result in negative outcomes. A prime example is the lack of knowledge of the economic and ecological value of preserving and/or conserving habitat. If the long-term value of natural resource preservation is not weighed against short-term economics of land use change then local economies may be devastated.

Background

Environmental education throughout the Gulf Coast has a three-fold mission: to increase the public's awareness and knowledge of the environment and its associated challenges, to develop the necessary critical thinking skills and subsequent plans to address those challenges, and to foster proactive attitudes in order to implement positive, responsible environmental actions. This mission is addressed though both formal and informal education. Formal education provides the fundamental principles and concepts of environmental science through the K-12 school systems and institutions of higher learning. This form of learning is a long-term investment established to produce future leaders with a strong understanding of environmental concepts and other disciplines to make informed decisions related to economic stability and environmental health. Informal education through community- and professional-based programs can, and does, reach a broad audience in effort to foster life-long environmental learning. Such programs provide individuals with the knowledge and skills needed to make informed and responsible choices in their daily lives with regard to how their actions affect their surrounding environment.

The Gulf Coast has several formal and informal systems in place to address environmental education. All of the Gulf States have formal units dedicated to

environmental education within the prescribed courses of study and all five states have coastal institutions of higher learning which support the States' structured programs to varying degrees. The general public is the primary target for many other programs providing adults and children with knowledge and a personal experience through interactive activities and workshops. Coastal State agencies provide a variety of these programs with diverse topics and comprehensive content. In addition, each state has a Sea Grant Program, an EPA Coastal Nonpoint Source Program, and a Coastal Zone Management Program with education and outreach components directed toward their coastal area and relevant environmental issues critical to both the Gulf of Mexico region and the respective states. Academic marine laboratories also play a key role through formal education of marine science as well as foster partnerships with state and federal programs.

The coastal states also partner with federal agencies to conduct education initiatives and training through the Sea Grant Extension Programs, National Science Foundation, the National Institute of Health, the Department of Interior, the U.S. Geological Survey, the Environmental Protection Agency, the U.S. Navy, and the National Oceanic and Atmospheric Administration, such as the National Estuarine Research Reserve Systems (NERRS), Coastal Training Programs, National Estuary Programs (NEP), as well as Restore America's Estuaries affiliates and the State Departments of Natural Resources, found in most of the Gulf States. These programs promote responsible stewardship through research, education, and planning. In addition to these, the Gulf coast states offer a wide variety of non-government organizations (NGOs) that provide educational flexibility in terms of volunteers, community development, scope of environmental topics and issues to be addressed, and media resources. Those NGOs can provide a different level of public awareness by offering a sense of place and personal engagement through membership and common beliefs concerning a specific environmental issue. This sense of place can be further developed through a personal connection with any one of a series of protected areas throughout the Gulf Coast, such as the Gulf Islands National Seashore, State Parks, National Refuges and National Estuarine Research Reserves.

Strengths / Progress

The Gulf Coast states are each unique in their approach toward environmental education. However, similarities can be noted, such as those below:

- Every county along the Gulf Coast has an extension office providing adult education programs. Besides those offices, Sea Grant Programs augment USDA and state extension with education professionals.
- The coastal states have a number of qualified and interested natural resources professionals serving in positions to provide educational needs.
- Partnerships with a variety of agencies exist to coordinate efforts. These partnerships are essential in providing funds and resources for programs that may be lacking.
- Interactive programs emphasize a 'human element' or level of physical involvement in environmental activities to generate a personal connection. These inquiry-based

programs provide a "learn by experience" situation. Such a program would be the states' Coastal Cleanup Day and Adopt-A-Beach Programs, in which volunteers clean trash from their state's respective coastline. These programs not only provide a means of litter removal, but they also educate the public on the problems of an important environmental challenge – marine debris.

- Media services (newspapers, television, and radio) are beginning to increase public awareness through positive, proactive, exposure.
- Workshops are available for professional development for technical topics such as stream restoration, grant writing, and best management practices.
- Web-based programs and information offer a new conduit of education opportunities to geographically restricted areas. For example, *Estuaries Live!* is an Internet broadcast virtual tour of an estuary. This annual program is geared for students but available to anyone with Internet access.
- The Southern Association of Marine Educators (SAME) and the Southern Association of Marine Laboratories (SAML) are among the oldest and most active of the national affiliates.
- In terms of outreach efforts, the amount of volunteerism is strong. Volunteers are often considered the backbone of some programs and are also on the 'front line' for public interaction. Volunteers' knowledge and attitudes can have lasting and profound, positive effects with these audiences. These volunteers often serve as docents at aquariums or nature centers, as trainers for water quality monitoring, as facilitators in activities to help restore habitat and protect wildlife, and/or serve as visiting educators to teach an environmental lesson for the day. Volunteers tend to be proactive and positive.

Challenges / Barriers

Despite all the strengths of the coastal States, the challenges of providing effective environmental education to the masses are serious and significant.

Coastal States' Capabilities

- Throughout the coastal region, through varying degrees, most school systems, government agencies, and NGOs are experiencing continuous budget reductions. Traditionally, the quality of education suffers when budget reductions are made within federal and state agencies having education as part of their missions. In response to this concern, more partnerships are often developed in order to leverage fiscal resources. Partnerships are inherently beneficial; however, it would be much better to rely upon partnerships out of choice rather than necessity.
- 'Environmental education' is an umbrella for numerous environmental issues. The exercise of prioritizing topics for educational purposes can often be overwhelming when faced with lack of funds, lack of trained personnel and complex concepts.
- Redundancy, too often, plays a role when similar themed projects, lessons or activities of multiple agencies are involved in the same area.

- The technical/scientific community has been unable to assign credible economic value to environmental assets, due to the difficulty in assigning a dollar value on "green infrastructure" that is not traded in the marketplace.

Environmental Literacy

- The pressures on formal classroom educators leave little time to enable them to incorporate existing resources into daily lesson plans. Materials designed for the classroom use must be fully developed and standards-based prior to introduction to the educator.
- Diverse environmental education involves a variety of Earth sciences to include weather systems, geology, physical geography, or other similar topics. These thematic areas are often not consistently or continually addressed across grade levels.
- The requirement for constant testing has forced teachers to reduce the amount of time they spend on experiential learning and "teaching for the test" for improved scores. Without experiential learning to support the written information, the neural connections between science and 'leaning by doing science in the environment' are lost.
- The growing price of fuel is forcing schools to reduce or eliminate experiential learning by discontinuing field trips. These field trips could include visits to the environment and environmental facilities, as well as history and citizenship trips to Washington, D.C.

Additional Barriers

- Barriers to effective environmental education are seen at a variety of levels, including individual school administrators, political priorities, pre-conceived ideas, competing issues, and a general lack of awareness or interest from leaders and administrators. This phenomenon can be witnessed through the increasing development pressure on the coast and its associated focus on economic growth. In the face of explosive population growth in the coastal region, it is difficult for many of the Gulf States to resist the conversion of natural habitat to human habitat at an unqualified ecological loss. Effective environmental education of the decision makers is reduced when actions are taken without examining ecological consequences.
- Geographically, impacts to the Gulf of Mexico are not isolated to the Gulf Coast states. Decline in water quality of the Gulf is linked to watershed land use upstream from the Gulf Coast states, including non-point source discharge from states draining to the Mississippi River, and impacts associated with coastal land use in Mexico and Cuba. Therefore, an education gap exists for targeting key audiences in Mexico, Cuba and U.S. states adjacent to the coastal region regarding their influence on the Gulf.
- Social, economic and cultural factors serve an influential role in inhibiting an individual's access to environmental education opportunities. These factors are typically even stronger among minorities that have been underrepresented and underserved in scientific fields. Repairing this gap will depend on clearly

demonstrating the environmental field as viable, socially-responsible, and financially rewarding.

- Advertising (print ads, PSAs, billboards), which can serve multiple years of service, is often too expensive for grassroots organizations to disseminate their concept to the mass public. This is particularly true for television which remains the principal source of information to the majority of the general public.

Opportunities / Potential Solutions

These barriers can be overcome with the proper support and collaboration between those local, state and federal agencies involved with the implementation of educational programs. Through a regional alliance the following recommendations can provide a more effective mechanism to continue the mission of environmental education.

- Utilize the successes of existing programs. Such programs include, but are not limited to, Sea Grant Extension, National Estuary Programs, and National Estuary Research Reserves. These programs represent partnerships at the federal, state, and local level that can bring public and private sector interests together to address local needs. Therefore, such programs could also serve as a network to establish an ongoing process for identifying priority needs of local communities related to the Gulf of Mexico. Such issues and/or potential solutions could be circulated through websites, biannual "State of the Coast" conferences, and other facilitated education efforts to engage local communities in implementing an Action Plan for the Gulf Coast.
- In order to stay current with environmental education, long-term sustainable funding needs to be established to maintain "state of the art" technology and information for students at the K-16 level.
- Continue to strengthen existing partnerships, and establish new collaboratives with private industry to help promote and/or fund environmental education activities.
- Encourage "integrated education" inside and outside the classroom. It may be likely that environmental education should be significantly *infused* into more fundamental curricula as opposed to assigning curricular time to environmental education, *per se*. For example, an English lesson could be writing a paragraph about an outdoor experience or reading environmentally related material for a book report. A math assignment could use scientific data rather than randomly generated information.
- Encourage 'integrated education' through the media. With the wide range of media exposure, environmental education, along with the potential to develop a sense of place, could be achieved through their willingness to provide local environmental information. For example, an 'enviro-fact' can be given with the local weather report.
- Encourage environmental awareness as an integral part of community development and improvement. Creating a positive environment can result in

other mutually beneficial community factors – equating a healthy environment with "quality of life" issues.

- Continue to invite politicians to participate in the 'good things' flowing from existing programs and activities and encourage greater support from the legislature. Or, more importantly, define and demonstrate the economic value associated with the maintenance of natural environmental assets.
- Develop, or strengthen existing, coastal public outreach task forces: a group of area or regional environmental education professionals who provide a network of support and information exchange.
- Take advantage of existing, well-funded environmental programs to educate and involve citizens about these priority problems identified by the Gulf Alliance.
- Continue, and enhance, workshops, teacher inservices, teacher preparation, and other similar training programs that provide relevant environmental resources to the participants.
- Implement economic valuation studies in targeted representative areas along the Gulf Coast, conducted by academic institutions to ensure a high level of credibility. Results could be integrated into education and training programs conducted by local partners.